

X  
ENTEREDRECEIVED  
JUL 10 2002  
ENTER 1600/2900

600

#12

## RAW SEQUENCE LISTING

PATENT APPLICATION: US/09/580,704

DATE: 06/20/2002

TIME: 14:20:46

Input Set : A:\04647-1.txt

Output Set: N:\CRF3\06202002\I580704.raw

```

3 <110> APPLICANT: Lomonossoff, George P.
4   Johnson, John E.
6 <120> TITLE OF INVENTION: Modified Plant Viruses as Vectors
8 <130> FILE REFERENCE: DOW-04647
10 <140> CURRENT APPLICATION NUMBER: 09/580,704
11 <141> CURRENT FILING DATE: 2000-05-30
13 <160> NUMBER OF SEQ ID NOS: 22
15 <170> SOFTWARE: PatentIn version 3.1
17 <210> SEQ ID NO: 1
18 <211> LENGTH: 120
19 <212> TYPE: DNA
20 <213> ORGANISM: Cowpea mosaic virus
22 <220> FEATURE:
23 <221> NAME/KEY: CDS
24 <222> LOCATION: (1)..(120)
25 <223> OTHER INFORMATION:
28 <400> SEQUENCE: 1
29 gga cct gtt tgt gct gaa gcc tca gat gtg tat agc cca tgt atg ata      48
30 Gly Pro Val Cys Ala Glu Ala Ser Asp Val Tyr Ser Pro Cys Met Ile
31 1          5          10          15
33 gct agc act cct cct gct cca ttt tca gac gtt aca gca gta act ttt      96
34 Ala Ser Thr Pro Pro Ala Pro Phe Ser Asp Val Thr Ala Val Thr Phe
35 20          25          30
37 gac tta atc aac ggc aaa ata act      120
38 Asp Leu Ile Asn Gly Lys Ile Thr
39 35          40
42 <210> SEQ ID NO: 2
43 <211> LENGTH: 40
44 <212> TYPE: PRT
45 <213> ORGANISM: Cowpea mosaic virus
47 <400> SEQUENCE: 2
49 Gly Pro Val Cys Ala Glu Ala Ser Asp Val Tyr Ser Pro Cys Met Ile
50 1          5          10          15
53 Ala Ser Thr Pro Pro Ala Pro Phe Ser Asp Val Thr Ala Val Thr Phe
54 20          25          30
57 Asp Leu Ile Asn Gly Lys Ile Thr
58 35          40
61 <210> SEQ ID NO: 3
62 <211> LENGTH: 81
63 <212> TYPE: DNA
64 <213> ORGANISM: Foot-and-mouth disease virus
66 <220> FEATURE:
67 <221> NAME/KEY: CDS

```

## RAW SEQUENCE LISTING

PATENT APPLICATION: US/09/580,704

DATE: 06/20/2002

TIME: 14:20:46

Input Set : A:\04647-1.txt

Output Set: N:\CRF3\06202002\I580704.raw

```

68 <222> LOCATION: (3)..(80)
69 <223> OTHER INFORMATION:
72 <400> SEQUENCE: 3
73 ct agc act tat agt aga aat gct gtt cct aat ttg aga gga gat ctt      47
74   Ser Thr Tyr Ser Arg Asn Ala Val Pro Asn Leu Arg Gly Asp Leu
75   1           5           10           15
77 caa gtt ttg gct caa aag gtt gct cgg act ctt c      81
78 Gln Val Leu Ala Gln Lys Val Ala Arg Thr Leu
79           20           25
82 <210> SEQ ID NO: 4
83 <211> LENGTH: 26
84 <212> TYPE: PRT
85 <213> ORGANISM: Foot-and-mouth disease virus
87 <400> SEQUENCE: 4
89 Ser Thr Tyr Ser Arg Asn Ala Val Pro Asn Leu Arg Gly Asp Leu Gln
90 1           5           10           15
93 Val Leu Ala Gln Lys Val Ala Arg Thr Leu
94           20           25
97 <210> SEQ ID NO: 5
98 <211> LENGTH: 156
99 <212> TYPE: DNA
100 <213> ORGANISM: Foot-and-mouth disease virus
102 <220> FEATURE:
103 <221> NAME/KEY: CDS
104 <222> LOCATION: (1)..(156)
105 <223> OTHER INFORMATION:
108 <400> SEQUENCE: 5
109 gga cct gtt tgt gct gaa gcc tca gat gtg tat agc cca tgt atg ata      48
110 Gly Pro Val Cys Ala Glu Ala Ser Asp Val Tyr Ser Pro Cys Met Ile
111 1           5           10           15
113 gct agc act tat agt aga aat gct gtt cct aat ttg aga gga gat ctt      96
114 Ala Ser Thr Tyr Ser Arg Asn Ala Val Pro Asn Leu Arg Gly Asp Leu
115           20           25           30
117 caa gtt ttg gct caa aag gtt gct cgg act ctt cct agc act cct cct      144
118 Gln Val Leu Ala Gln Lys Val Ala Arg Thr Leu Pro Ser Thr Pro Pro
119           35           40           45
121 gct cca ttt tca      156
122 Ala Pro Phe Ser
123           50
126 <210> SEQ ID NO: 6
127 <211> LENGTH: 52
128 <212> TYPE: PRT
129 <213> ORGANISM: Foot-and-mouth disease virus
131 <400> SEQUENCE: 6
133 Gly Pro Val Cys Ala Glu Ala Ser Asp Val Tyr Ser Pro Cys Met Ile
134 1           5           10           15
137 Ala Ser Thr Tyr Ser Arg Asn Ala Val Pro Asn Leu Arg Gly Asp Leu
138           20           25           30
141 Gln Val Leu Ala Gln Lys Val Ala Arg Thr Leu Pro Ser Thr Pro Pro

```

## RAW SEQUENCE LISTING

PATENT APPLICATION: US/09/580,704

DATE: 06/20/2002

TIME: 14:20:46

Input Set : A:\04647-1.txt

Output Set: N:\CRF3\06202002\I580704.raw

```

142          35          40          45
145 Ala Pro Phe Ser
146          50
149 <210> SEQ ID NO: 7
150 <211> LENGTH: 69
151 <212> TYPE: DNA
152 <213> ORGANISM: Cowpea mosaic virus
154 <220> FEATURE:
155 <221> NAME/KEY: CDS
156 <222> LOCATION: (1)..(69)
157 <223> OTHER INFORMATION:
160 <400> SEQUENCE: 7
161 cca tgt atg ata gct agc act cct cct gct cca ttt tca gac gtt aca      48
162 Pro Cys Met Ile Ala Ser Thr Pro Pro Ala Pro Phe Ser Asp Val Thr
163 1          5          10          15
165 gca gta act ttt gac tta atc      69
166 Ala Val Thr Phe Asp Leu Ile
167          20
170 <210> SEQ ID NO: 8
171 <211> LENGTH: 23
172 <212> TYPE: PRT
173 <213> ORGANISM: Cowpea mosaic virus
175 <400> SEQUENCE: 8
177 Pro Cys Met Ile Ala Ser Thr Pro Pro Ala Pro Phe Ser Asp Val Thr
178 1          5          10          15
181 Ala Val Thr Phe Asp Leu Ile
182          20
185 <210> SEQ ID NO: 9
186 <211> LENGTH: 69
187 <212> TYPE: DNA
188 <213> ORGANISM: Cowpea mosaic virus
190 <220> FEATURE:
191 <221> NAME/KEY: CDS
192 <222> LOCATION: (1)..(69)
193 <223> OTHER INFORMATION:
196 <400> SEQUENCE: 9
197 cca tgt atg ata gct agc act cct cct gct cca ttt tca gac gtc aca      48
198 Pro Cys Met Ile Ala Ser Thr Pro Pro Ala Pro Phe Ser Asp Val Thr
199 1          5          10          15
201 gca gta act ttt gac tta atc      69
202 Ala Val Thr Phe Asp Leu Ile
203          20
206 <210> SEQ ID NO: 10
207 <211> LENGTH: 23
208 <212> TYPE: PRT
209 <213> ORGANISM: Cowpea mosaic virus
211 <400> SEQUENCE: 10
213 Pro Cys Met Ile Ala Ser Thr Pro Pro Ala Pro Phe Ser Asp Val Thr
214 1          5          10          15

```

## RAW SEQUENCE LISTING

DATE: 06/20/2002

PATENT APPLICATION: US/09/580,704

TIME: 14:20:46

Input Set : A:\04647-1.txt

Output Set: N:\CRF3\06202002\I580704.raw

```

217 Ala Val Thr Phe Asp Leu Ile
218      20
221 <210> SEQ ID NO: 11
222 <211> LENGTH: 67
223 <212> TYPE: DNA
224 <213> ORGANISM: Human immunodeficiency virus
226 <220> FEATURE:
227 <221> NAME/KEY: CDS
228 <222> LOCATION: (3)..(65)
229 <223> OTHER INFORMATION:
232 <400> SEQUENCE: 11
233 ct agc act gac cgc cct gag ggc atc gag gaa gag ggc ggt gag cgc      47
234   Ser Thr Asp Arg Pro Glu Gly Ile Glu Glu Glu Gly Gly Glu Arg
235   1          5          10          15
237 gat cgt gat cgt tcg gac gt      67
238 Asp Arg Asp Arg Ser Asp
239      20
242 <210> SEQ ID NO: 12
243 <211> LENGTH: 21
244 <212> TYPE: PRT
245 <213> ORGANISM: Human immunodeficiency virus
247 <400> SEQUENCE: 12
249 Ser Thr Asp Arg Pro Glu Gly Ile Glu Glu Glu Gly Gly Glu Arg Asp
250 1          5          10          15
253 Arg Asp Arg Ser Asp
254      20
257 <210> SEQ ID NO: 13
258 <211> LENGTH: 141
259 <212> TYPE: DNA
260 <213> ORGANISM: Human immunodeficiency virus
262 <220> FEATURE:
263 <221> NAME/KEY: CDS
264 <222> LOCATION: (1)..(141)
265 <223> OTHER INFORMATION:
268 <400> SEQUENCE: 13
269 gga cct gtt tgt gct gaa gcc tca gat gtg tat agc cca tgt atg ata      48
270 Gly Pro Val Cys Ala Glu Ala Ser Asp Val Tyr Ser Pro Cys Met Ile
271 1          5          10          15
273 gct agc act gac cgc cct gag ggc atc gag gaa gag ggc ggt gag cgc      96
274 Ala Ser Thr Asp Arg Pro Glu Gly Ile Glu Glu Glu Gly Gly Glu Arg
275      20          25          30
277 gat cgt gat cgt tcg gac gtc aca gca gta act ttt gac tta atc      141
278 Asp Arg Asp Arg Ser Asp Val Thr Ala Val Thr Phe Asp Leu Ile
279      35          40          45
282 <210> SEQ ID NO: 14
283 <211> LENGTH: 47
284 <212> TYPE: PRT
285 <213> ORGANISM: Human immunodeficiency virus
287 <400> SEQUENCE: 14

```

## RAW SEQUENCE LISTING

DATE: 06/20/2002

PATENT APPLICATION: US/09/580,704

TIME: 14:20:46

Input Set : A:\04647-1.txt

Output Set: N:\CRF3\06202002\I580704.raw

```
289 Gly Pro Val Cys Ala Glu Ala Ser Asp Val Tyr Ser Pro Cys Met Ile
290 1 5 10 15
293 Ala Ser Thr Asp Arg Pro Glu Gly Ile Glu Glu Glu Gly Gly Glu Arg
294 20 25 30
297 Asp Arg Asp Arg Ser Asp Val Thr Ala Val Thr Phe Asp Leu Ile
298 35 40 45
301 <210> SEQ ID NO: 15
302 <211> LENGTH: 52
303 <212> TYPE: DNA
304 <213> ORGANISM: Human rhinovirus
306 <220> FEATURE:
307 <221> NAME/KEY: CDS
308 <222> LOCATION: (3)..(50)
309 <223> OTHER INFORMATION:
312 <400> SEQUENCE: 15
313 ct agc act cct gct act gga atc gat aat cat aga gaa gct aaa ttg 47
314 Ser Thr Pro Ala Thr Gly Ile Asp Asn His Arg Glu Ala Lys Leu
315 1 5 10 15
317 gac gt 52
318 Asp
322 <210> SEQ ID NO: 16
323 <211> LENGTH: 16
324 <212> TYPE: PRT
325 <213> ORGANISM: Human rhinovirus
327 <400> SEQUENCE: 16
329 Ser Thr Pro Ala Thr Gly Ile Asp Asn His Arg Glu Ala Lys Leu Asp
330 1 5 10 15
333 <210> SEQ ID NO: 17
334 <211> LENGTH: 126
335 <212> TYPE: DNA
336 <213> ORGANISM: Human rhinovirus
338 <220> FEATURE:
339 <221> NAME/KEY: CDS
340 <222> LOCATION: (1)..(126)
341 <223> OTHER INFORMATION:
344 <400> SEQUENCE: 17
345 gga cct gtt tgt gct gaa gcc tca gat gtg tat agc cca tgt atg ata 48
346 Gly Pro Val Cys Ala Glu Ala Ser Asp Val Tyr Ser Pro Cys Met Ile
347 1 5 10 15
349 gct agc act cct gct act gga atc gat aat cat aga gaa gct aaa ttg 96
350 Ala Ser Thr Pro Ala Thr Gly Ile Asp Asn His Arg Glu Ala Lys Leu
351 20 25 30
353 gac gtc aca gca gta act ttt gac tta atc 126
354 Asp Val Thr Ala Val Thr Phe Asp Leu Ile
355 35 40
358 <210> SEQ ID NO: 18
359 <211> LENGTH: 42
360 <212> TYPE: PRT
361 <213> ORGANISM: Human rhinovirus
```

**VERIFICATION SUMMARY**

PATENT APPLICATION: US/09/580,704

DATE: 06/20/2002

TIME: 14:20:47

Input Set : A:\04647-1.txt

Output Set: N:\CRF3\06202002\I580704.raw